

G. Report on Reliability of Existing Transmission and Distribution Systems [411.120 b) 3) G)]

i. Qualitative Characterization of MidAmerican Transmission and Distribution System [411.120 b) 3) G) i)]

MidAmerican's Illinois District transmission system is composed of approximately 13,586 wood poles and supporting structures with an average age of approximately 32 years as well as other non-wood structures. The Illinois District distribution system is composed of approximately 83,914 wood poles and supporting structures with an average age of approximately 28 years. These ages are based on a weighted average of the age of the wood poles and supporting structures. MidAmerican views the current condition of both the transmission and distribution system as safe, in good repair, and in compliance with the applicable laws and code(s).

The criteria used to assess the current condition of MidAmerican's Illinois District system are the results of recent inspections completed in compliance with the T&D inspection program described in Section 411.120 3) A) iii) of this Report. Based on these results, it can generally be concluded that the existing facilities maintain adequate mechanical and electrical properties to provide continued safe and reliable service to MidAmerican's customers.

ii. **Interruption and Voltage Variance Summary** [411.120 b) 3) G) ii)]

MidAmerican's Illinois District serves 86,175 customers. In 1998, the Illinois District experienced 185,712 customer interruptions which affected 72,632 customers. The total interruption time associated with these interruptions was 27,083,842 customer-minutes.

Reliability Indices for the Illinois District are as follows:

**ILLINOIS DISTRICT
1998 ELECTRIC RELIABILITY
INDICES**

SYSTEM¹ AVERAGE INTERRUPTION FREQUENCY INDEX	CUSTOMER² AVERAGE INTERRUPTION DURATION INDEX	CUSTOMER³ AVERAGE INTERRUPTION FREQUENCY INDEX
2.155	145.84	2.557

$$1 - \text{SAIFI} = \frac{\text{Number of Customer Interruptions}}{\text{Number of Customers Served}} = \frac{185,712 \text{ Customer-Interruptions}}{86,175 \text{ Customers}}$$

$$2 - \text{CAIDI} = \frac{\text{Sum of all Interruption Durations}}{\text{Number of Customer Interruptions}} = \frac{27,083,842 \text{ Customer-Interruption minutes}}{185,712 \text{ Customer-Interruptions}}$$

$$3 - \text{CAIFI} = \frac{\text{Number of Customer Interruptions}}{\text{Number of Customers Affected}} = \frac{185,712 \text{ Customer-Interruptions}}{72,632 \text{ Customer Affected}}$$

iii. **Expenditures for Transmission Construction and Maintenance** [411.120 b) 3) G) iii)]

**Expenditures for Illinois District
Transmission Construction¹ and Maintenance²
(\$1,000's)
(1996 – 1998)**

	1998	1997	1996
Construction	\$ 842	\$ 4,652	\$ 656
O&M	<u>\$ 1,383</u>	<u>\$ 1,427</u>	<u>\$ 1,158</u>
Total	<u>\$ 2,225</u>	<u>\$ 6,079</u>	<u>\$ 1,814</u>

1- This represents capital dollars for projects historically budgeted as transmission and directly attributable to the Illinois District.

2- These dollars come from MidAmerican's FORM 21 ILCC filing with the Illinois Commerce Commission, page 5, Section VIII. 'Operating Revenues and Expenses', Line No. 4 'Transmission' for December 31 of the year as noted.

Transmission construction dollars increased in 1997 due to construction of a new 161/13 kV two transformer substation (Substation 49) and associated 161 kV transmission lines in the Illinois District.

**Ratio of Illinois District Transmission Construction and Maintenance Expenditures
to Illinois District Transmission Investment
(1996 – 1998)**

	1998	1997	1996
Transmission Investment (depreciated)	\$32,426,637	\$32,308,172	\$34,283,099
Ratio (Total/ Transmission Investment (depreciated))	6.9%	18.8%	5.3%

**Average Remaining Depreciation Lives of
Illinois District Transmission Facilities
as a Percent of Total Depreciation Lives
(1996 – 1998)**

Account	Description	% Remaining Life		
		1998	1997	1996
350.1	Land Rights	53%	55%	57%
352	Structures	64%	58%	59%
353	Station Equipment	69%	71%	69%
354	Towers & Fixtures	52%	54%	56%
355	Poles & Fixtures	70%	71%	70%
356	Overhead Conductor Devices	63%	63%	62%
356.1	Overhead Conductor Devices - IowaPower	19%	24%	29%
358	Underground Conductor Devices	58%	59%	44%
359	Roads & Trails	25%	27%	29%

iv. **Expenditures for Distribution Construction and Maintenance** [411.120
b) 3) G) iv)]

**Expenditures for Illinois District
Distribution Construction¹ and Maintenance²
(\$1,000's)
(1996 – 1998)**

	1998	1997	1996
Construction	\$ 4,088	\$ 2,833	\$ 3,005
O&M	<u>\$ 6,765</u>	<u>\$ 7,399</u>	<u>\$ 5,074</u>
Total	<u>\$ 10,853</u>	<u>\$ 10,232</u>	<u>\$ 8,079</u>

1- This represents specific Illinois District project dollars historically budgeted as distribution and an allocation of specific project common dollars historically budgeted as distribution to the Illinois District.

3- These dollars come from MidAmerican's FORM 21 ILCC filing with the Illinois Commerce Commission, page 5, Section VIII. 'Operating Revenues and Expenses', Line No. 4 'Distribution' for December 31 of the year as noted.

The increase in construction dollars in 1998 is primarily due an increase in governmental rebuilds and projects.

**Ratio of Illinois District Distribution Construction and Maintenance Expenditures
to Illinois District Distribution Investment
(1996 – 1998)**

	1998	1997	1996
Distribution Investment (depreciated)	\$ 68,039,834	\$ 65,934,447	\$ 67,306,105
Ratio (Total/ Distribution Investment (depreciated))	16.0%	15.5%	12.0%

**Average Remaining Depreciation Lives of
Illinois District Distribution Facilities
as a Percent of Total Depreciation Lives
(1996 – 1998)**

Account	Description	% Remaining Life		
		1998	1997	1996
360.1	Land Rights	67%	62%	(1)
361	Structures	68%	66%	66%
362	Station Equipment	66%	67%	68%
364	Poles/Towers/Fixtures	61%	62%	64%
365	Overhead Conductor	69%	70%	71%
366	Underground Conduit	67%	68%	68%
367	Underground Conductor Devices	72%	73%	74%
368	Line Transformers	63%	64%	65%
369	Services	66%	66%	67%
370	Meters	68%	68%	69%
371	Installations on Customers Premises	55%	57%	58%
373	Street Lights	79%	80%	81%

(1) – The useful life for this account was redefined during 1996

v. Customer Satisfaction Survey Results [411.120 b) 3) G) v)]

See Attachment D for the results of the Illinois District Residential and Commercial Reliability Survey. Due to the small sample size used in the survey, the results are subject to an error of plus or minus ten percent.

vi. Overview of Customer Reliability Complaints [411.120 b) G) vi)]

There were two Illinois District electric reliability complaints made to the Illinois Commerce Commission and forwarded to MidAmerican's Customer Service Quality Department in 1998. The complaints and their resolutions are listed in Attachment E.